

***What Is Claimed Is:***

1. An isolated nucleic acid molecule consisting of a polynucleotide having a nucleotide sequence at least 90% identical to a sequence selected from the group consisting of:

- (a) a nucleotide sequence encoding a polypeptide comprising amino acids from 31 to 110 in SEQ ID NO:2 (Figure 1A);
  - (b) a nucleotide sequence encoding a polypeptide comprising amino acids from 31 to 163 in SEQ ID NO:2 (Figure 1A);
  - (c) a nucleotide sequence encoding a polypeptide comprising amino acids from 31 to 165 in SEQ ID NO:2; and
  - (d) a nucleotide sequence complementary to any of the nucleotide sequences in (a), (b), or (c);
- and optionally, a heterologous polynucleotide sequence.

2. The nucleic acid molecule of claim 1, wherein the selected sequence is (a).

3. The nucleic acid molecule of claim 1, wherein the polynucleotide sequence is at least 95% identical to sequence (a).

4. The nucleic acid molecule of claim 1, wherein the polynucleotide is (a).

5. The nucleic acid molecule of claim 1, wherein the selected sequence is (b).

6. The nucleic acid molecule of claim 1, wherein the polynucleotide sequence is at least 95% identical to sequence (b).

7. The nucleic acid molecule of claim 1, wherein the polynucleotide is (b).

8. The nucleic acid molecule of claim 1, wherein the selected sequence is (c).

9. The nucleic acid molecule of claim 1, wherein the polynucleotide sequence is at least 95% identical to sequence ©.

10. The nucleic acid molecule of claim 1, wherein the polynucleotide is (c).

11. The nucleic acid molecule of claim 1, wherein the selected sequence is (d).

12. The nucleic acid molecule of claim 1, wherein the polynucleotide sequence is at least 95% identical to sequence (d).

13. The nucleic acid molecule of claim 1, wherein the polynucleotide is (d).

14. The nucleic acid molecule of claim 1, wherein the heterologous sequence encodes a polypeptide

15. A method for making a recombinant vector comprising inserting an isolated nucleic acid molecule of claim 1 into a vector.

16. A recombinant vector produced by the method of claim 15.

17. A method of making a recombinant host cell comprising introducing the recombinant vector of claim 16 into a host cell.

18. A recombinant host cell produced by the method of claim 17.

19. A recombinant method for producing a polypeptide, comprising culturing the recombinant host cell of claim 18 under conditions such that the polypeptide encoded by the

nucleic acid molecule of claim 1 is expressed, and recovering said polypeptide.

20. An isolated polypeptide having an amino acid sequence at least 90% identical to a sequence selected from the group consisting of:

isolated nucleic acid molecule consisting of a polynucleotide having a nucleotide sequence at least 90% identical to a sequence selected from the group consisting of:

- (a) amino acids from 31 to 110 in SEQ ID NO:2 (Figure 1A);
- (b) amino acids from 31 to 163 in SEQ ID NO:2 (Figure 1A); and

1. amino acids from 31 to 165 in SEQ ID NO:2;

and optionally, a heterologous polypeptide sequence.

21. An isolated antibody that binds specifically to the polypeptide of claim 20.

22. An isolated antibody that binds specifically to a polypeptide consisting of amino acid residues selected from the group consisting of:

- (a) amino acids 5 to 15 in SEQ ID NO:2;
- (b) amino acids 28 to 40 in SEQ ID NO:2;
- (c) amino acids 50 to 64 in SEQ ID NO:2;
- (d) amino acids 70 to 85 in SEQ ID NO:2;
- (e) amino acids 100 to 112 in SEQ ID NO:2;
- (f) amino acids 115 to 134 in SEQ ID NO:2;
- (g) amino acids 136 to 150 in SEQ ID NO:2;
- (h) amino acids 186 to 216 in SEQ ID NO:2;
- (i) amino acids 220 to 232 in SEQ ID NO:2;



24. A method of diagnosing an immunodeficiency or condition associated with an immunodeficiency, comprising contacting the polypeptide of claim 20, or the antibody of claim 21 or 22, with a biological sample, and assaying for binding to said protein or antibody; wherein said immunodeficiency is a member selected from the group consisting of: severe combined immunodeficiency (SCID)-X linked, SCID-autosomal, adenosine deaminase deficiency (ADA deficiency), X-linked agammaglobulinemia (XLA), Bruton's disease, congenital agammaglobulinemia, X-linked infantile agammaglobulinemia, acquired agammaglobulinemia, adult onset agammaglobulinemia, late-onset agammaglobulinemia, dysgammaglobulinemia, hypogammaglobulinemia, transient hypogammaglobulinemia of infancy, unspecified hypogammaglobulinemia, agammaglobulinemia, common variable immunodeficiency (CVID), Wiskott-Aldrich Syndrome (WAS), X-linked immunodeficiency with hyper IgM, non X-linked immunodeficiency with hyper IgM, selective IgA deficiency, IgG subclass deficiency (with or without IgA deficiency), antibody deficiency with normal or elevated Igs, immunodeficiency with thymoma, Ig heavy chain deletions, kappa chain deficiency, B cell lymphoproliferative disorder (BLPD), selective IgM immunodeficiency, recessive agammaglobulinemia (Swiss type), reticular dysgenesis, neonatal neutropenia, severe congenital leukopenia, thymic aplasia-aplasia or dysplasia with immunodeficiency, ataxia-telangiectasia, short limbed dwarfism, X-linked lymphoproliferative syndrome (XLP), Nezelof syndrome-combined immunodeficiency with Igs, purine nucleoside phosphorylase deficiency (PNP), MHC Class II deficiency (Bare Lymphocyte Syndrome), and severe combined immunodeficiency.

25. A method of treating an autoimmune disease or condition associated with an autoimmune disease, comprising administering an effective amount of the polypeptide of claim

20, to a patient in need thereof; wherein said autoimmune disease is a member selected from the group consisting of: autoimmune hemolytic anemia, autoimmune neonatal thrombocytopenia, idiopathic thrombocytopenia purpura, autoimmunocytopenia, hemolytic anemia, antiphospholipid syndrome, dermatitis, allergic encephalomyelitis, myocarditis, relapsing polychondritis, rheumatic heart disease, glomerulonephritis (e.g, IgA nephropathy), Multiple Sclerosis, Neuritis, Uveitis Ophthalmia, Polyendocrinopathies, Purpura (e.g., Henloch-Scoenlein purpura), Reiter's Disease, Stiff-Man Syndrome, Autoimmune Pulmonary Inflammation, Guillain-Barre Syndrome, insulin dependent diabetes mellitis, and autoimmune inflammatory eye, autoimmune thyroiditis, hypothyroidism (i.e., Hashimoto's thyroiditis, systemic lupus erythematosus, Goodpasture's syndrome, Pemphigus, Receptor autoimmunities such as, for example, (a) Graves' Disease , (b) Myasthenia Gravis, and (c) insulin resistance, autoimmune hemolytic anemia, autoimmune thrombocytopenic purpura , rheumatoid arthritis, schleroderma with anti-collagen antibodies, mixed connective tissue disease, polymyositis/dermatomyositis, pernicious anemia, idiopathic Addison's disease, infertility, glomerulonephritis such as primary glomerulonephritis and IgA nephropathy, bullous pemphigoid, Sjogren's syndrome, diabetes millitus, and adrenergic drug resistance (including adrenergic drug resistance with asthma or cystic fibrosis), chronic active hepatitis, primary biliary cirrhosis, other endocrine gland failure, vitiligo, vasculitis, post-MI, cardiomy syndrome, urticaria, atopic dermatitis, asthma, inflammatory myopathies, and other inflammatory, granulamatous, degenerative, and atrophic disorders).

26. A method of diagnosing an autoimmune disease or condition associated with an autoimmune disease, comprising contacting the polypeptide of claim 20 with a biological sample, and assaying for binding to said protein; wherein said autoimmune disease is a member

selected from the group consisting of: autoimmune hemolytic anemia, autoimmune neonatal thrombocytopenia, idiopathic thrombocytopenia purpura, autoimmunocytopenia, hemolytic anemia, antiphospholipid syndrome, dermatitis, allergic encephalomyelitis, myocarditis, relapsing polychondritis, rheumatic heart disease, glomerulonephritis (e.g, IgA nephropathy), Multiple Sclerosis, Neuritis, Uveitis Ophthalmia, Polyendocrinopathies, Purpura (e.g., Henloch-Scoenlein purpura), Reiter's Disease, Stiff-Man Syndrome, Autoimmune Pulmonary Inflammation, Guillain-Barre Syndrome, insulin dependent diabetes mellitis, and autoimmune inflammatory eye, autoimmune thyroiditis, hypothyroidism (i.e., Hashimoto's thyroiditis, systemic lupus erythematosus, Goodpasture's syndrome, Pemphigus, Receptor autoimmunities such as, for example, (a) Graves' Disease , (b) Myasthenia Gravis, and (c) insulin resistance, autoimmune hemolytic anemia, autoimmune thrombocytopenic purpura , rheumatoid arthritis, schleroderma with anti-collagen antibodies, mixed connective tissue disease, polymyositis/dermatomyositis, pernicious anemia, idiopathic Addison's disease, infertility, glomerulonephritis such as primary glomerulonephritis and IgA nephropathy, bullous pemphigoid, Sjogren's syndrome, diabetes millitus, and adrenergic drug resistance (including adrenergic drug resistance with asthma or cystic fibrosis), chronic active hepatitis, primary biliary cirrhosis, other endocrine gland failure, vitiligo, vasculitis, post-MI, cardiectomy syndrome, urticaria, atopic dermatitis, asthma, inflammatory myopathies, and other inflammatory, granulamatus, degenerative, and atrophic disorders).

27. A method of treating an autoimmune disease or condition associated with an autoimmune disease comprising, administering an effective amount of the antibody of claim 22, to a patient in need thereof; wherein said autoimmune disease is a member selected from the group consisting of: autoimmune hemolytic anemia, autoimmune neonatal thrombocytopenia,

idiopathic thrombocytopenia purpura, autoimmunocytopenia, hemolytic anemia, antiphospholipid syndrome, dermatitis, allergic encephalomyelitis, myocarditis, relapsing polychondritis, rheumatic heart disease, glomerulonephritis (e.g. IgA nephropathy), Multiple Sclerosis, Neuritis, Uveitis Ophthalmia, Polyendocrinopathies, Purpura (e.g., Henloch-Scoenlein purpura), Reiter's Disease, Stiff-Man Syndrome, Autoimmune Pulmonary Inflammation, Guillain-Barre Syndrome, insulin dependent diabetes mellitus, and autoimmune inflammatory eye, autoimmune thyroiditis, hypothyroidism (i.e., Hashimoto's thyroiditis, systemic lupus erythematosus, Goodpasture's syndrome, Pemphigus, Receptor autoimmunities such as, for example, (a) Graves' Disease, (b) Myasthenia Gravis, and (c) insulin resistance, autoimmune hemolytic anemia, autoimmune thrombocytopenic purpura, rheumatoid arthritis, scleroderma with anti-collagen antibodies, mixed connective tissue disease, polymyositis/dermatomyositis, pernicious anemia, idiopathic Addison's disease, infertility, glomerulonephritis such as primary glomerulonephritis and IgA nephropathy, bullous pemphigoid, Sjogren's syndrome, diabetes mellitus, and adrenergic drug resistance (including adrenergic drug resistance with asthma or cystic fibrosis), chronic active hepatitis, primary biliary cirrhosis, other endocrine gland failure, vitiligo, vasculitis, post-MI, cardiomyopathy syndrome, urticaria, atopic dermatitis, asthma, inflammatory myopathies, and other inflammatory, granulomatous, degenerative, and atrophic disorders).

28. A method of diagnosing an autoimmune disease or condition associated with an autoimmune disease, comprising contacting the antibody of claim 22 with a biological sample, and assaying for binding to said antibody, wherein said autoimmune disease is a member selected from the group consisting of: autoimmune hemolytic anemia, autoimmune neonatal thrombocytopenia, idiopathic thrombocytopenia purpura, autoimmunocytopenia, hemolytic



anemia, antiphospholipid syndrome, dermatitis, allergic encephalomyelitis, myocarditis, relapsing polychondritis, rheumatic heart disease, glomerulonephritis (e.g. IgA nephropathy), Multiple Sclerosis, Neuritis, Uveitis Ophthalmia, Polyendocrinopathies, Purpura (e.g., Henloch-Schoenlein purpura), Reiter's Disease, Stiff-Man Syndrome, Autoimmune Pulmonary Inflammation, Guillain-Barre Syndrome, insulin dependent diabetes mellitus, and autoimmune inflammatory eye, autoimmune thyroiditis, hypothyroidism (i.e., Hashimoto's thyroiditis, systemic lupus erythematosus, Goodpasture's syndrome, Pemphigus, Receptor autoimmunities such as, for example, (a) Graves' Disease, (b) Myasthenia Gravis, and (c) insulin resistance, autoimmune hemolytic anemia, autoimmune thrombocytopenic purpura, rheumatoid arthritis, scleroderma with anti-collagen antibodies, mixed connective tissue disease, polymyositis/dermatomyositis, pernicious anemia, idiopathic Addison's disease, infertility, glomerulonephritis such as primary glomerulonephritis and IgA nephropathy, bullous pemphigoid, Sjogren's syndrome, diabetes mellitus, and adrenergic drug resistance (including adrenergic drug resistance with asthma or cystic fibrosis), chronic active hepatitis, primary biliary cirrhosis, other endocrine gland failure, vitiligo, vasculitis, post-MI, cardiomyopathy syndrome, urticaria, atopic dermatitis, asthma, inflammatory myopathies, and other inflammatory, granulomatous, degenerative, and atrophic disorders).

29. A method of increasing B cell proliferation, comprising administering an effective amount of the antibody of claim 22, to a patient in need thereof.

30. A method of increasing immunoglobulin production, comprising administering an effective amount of the antibody of claim 22, to a patient in need thereof.

31. A method of inhibiting B cell proliferation, comprising administering an effective amount of the polypeptide of claim 20 or the antibody of claim 22 to a patient in need thereof.

32. A method of inhibiting immunoglobulin production, comprising administering an effective amount of the polypeptide of claim 20 or the antibody of claim 22, to a patient in need thereof.